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| 10/046,749 | 01/17/2002 | Gang Huang | HUANG 13-12-6 | 2534 |
| 7590 MANELLI DENISON & SELTER PLLC 7th Floor 2000 M Street, N.W. Washington, DC 20036-3307 | | | EXAMINER NGO, NGUYEN HOANG | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/046,749

Applicant(s)

HUANG ET AL.

Examiner

NGUYEN NGO

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

This communication is in response to the amendment of 4/22/2008. All changes made to the Claims have been entered. Accordingly, Claims 1-32 are currently pending in the application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haartsen (US 2002/0131486), in view of Partyka (US 6925105), hereinafter referred to as Haartsen, and Partyka,

Regarding claim 1, 10, 11 Haartsen discloses a method for training a radio receiver including receiving, the initial portion containing at least one flag to identify a corresponding reference training sequence to be selected by the receiver (a method of providing advance information (initial portion) to a receiver in a home network, page 2 [0016]). Haartsen further discloses;

that in digital communication, packets are used that are preceded by a preamble, which is followed by an information stream (payload, page1 [0012]) and further discloses that a field in the preamble is reserved for a flag b, which provides an indication to the receiver to aid the receiver in selecting a corresponding reference training sequence (providing auxiliary coding in said home network to said receiver, page 4 [0040]). It is noted that applicant discloses auxiliary coding (flag) is used to provide information to the receiving device to seed on training component with an appropriate predetermined value (reference training period) as stated on page 9.

of transmitting data packet including payloads to a receiver (providing data packets to said receiver, page 3 [0036]).

that the transmitter inserts flags in the preamble to indicate the training sequence and the modulation scheme used for the payload (page 4 [0040]). Haartsen further discloses that the flag provides an indication to the receiver to aid the receiver in selecting a corresponding reference training sequence (perform a table look-up in a station pre-training table to determine one or more training values associated with data packets from said transmitting device (reference training sequence), page 4 [0041]).

Haartsen however fails to disclose the specific limitation of having the auxiliary coding comprising a station ID parameter of a transmitting home network device to said receiver which is used to perform table look-up in a station pre-training table stored in said receiver, and using said station ID parameter allows said receiver to communicate with a plurality of stations having different transmission characteristics on a packet-by-packet basis based on said one or more training values, as amended. Haartsen however discloses of a transmitter and a receiver of a transmission system, and provides the motivation of training a radio receiver according to a training sequence dependent on a specified transmitter to produce successful communication between the transmitter and the receiver. Haartsen further discloses that the invention relates to radio communications for training an equalizer in a radio receiver (page 1 [0001]). It is well known in the art that radio communications not only incorporates a single transmitter and a single receiver, but also covers a plurality of transmitter and receivers. Haartsen's simply uses the concept of a single transmitter to receiver to illustrate the method of training a radio receiver in a simple and easy way. Haartsen further discloses that the invention may be used in any multi processor system (plurality of transmitters and receivers) and that the embodiments described should therefore be considered in all respects to **be illustrative and not restrictive** (page 4[0046]). Haartsen further discloses of the plural term of radio receivers (page 1 [0009]), thus providing the motivation to encompass a plurality of transmitters and receivers (a multi processor system). In a similar field of endeavor, Partyka discloses to a system in which a plurality

of transmitters transmit data to one or more radio receivers (col1 lines 5-10) and the radio receiver acquires and continuously maintains synchronization (training) with each of a plurality of transmitter (col2 lines 30-35) and further discloses of "multipath fading" (col1 lines 55-60) as also disclosed by Haartsen (page 3 [0033]). Partyka further discloses that each transmitter has a transmitter identification number assigned to it that is included in each transmitted message in order to make it possible for the receiver to identify the source of each received message (col1 lines 28-35) and to differentiate one transmitter from another (communicate with a plurality of stations having different transmission characteristics on a packet-by-packet basis based on said one or more training values, col8 lines 50-55) so that synchronization may be determined for each of the plurality of transmitters (the auxiliary coding comprising a station ID parameter of a transmitting home network device (transmitter) to said receiver (radio receiver) which is used to perform table look-up in a station pre-training table stored in said receiver (synchronization of the receiver as seen from Haartsen,col2 lines 30-35). It would have thus been obvious to a person skilled in the art at the time the invention was made to incorporate the system of having a receiver communicate with a plurality of transmitters involving the use of transmission identification as disclosed by Partyka into the method of training a radio receiver as disclosed by Haartsen, in order to effectively train and synchronize a radio receiver to not just a single transmitter, but a plurality of transmitters. It would have been further obvious to a person skilled in the art to incorporate the concept of having an identifier (such as source address/local address) for the transmitter be included in packet for pre-training lookup of a reference training

sequence (station ID parameter is used to perform a table look-up to determine training values) in order to correctly and successfully equalize a receiver to the correct transmitter.

Regarding claim 2, 3, and 4, the combination of Haartsen, and Partyka, more specifically Haartsen discloses the flag be inserted in the preamble (auxiliary coding is encompassed within said data packet, auxiliary coding is inserted into a preamble of said data packet, page4 [0043] and page 1 [0012]). It should be noted that the preamble is transmitted before the payload.

Regarding claim 5 and 6, the combination of Haartsen, and Partyka fails to disclose of transmitting the auxiliary coding with a same RF front end as said data packet or transmitting said auxiliary coding with a different RF front end as said data packet. Haartsen however discloses from figure 3 of a transmitter and a receiver system for transmission of data. It should thus be obvious to transmit the auxiliary coding with the same RF front end or a different RF front end from said data packet, as it is well known in the art that transmitters/receivers incorporate RF front ends for efficient data transmissions. It should be noted that transmitting of auxiliary coding through a specified RF front end is simply a systems parameter of the transmission system and its components.

Regarding claim 7, 8, and 9, the combination of Haartsen, and Partyka, more specifically Haartsen discloses that the training sequence will vary according to the modulation scheme applied such as QAM, and BPSK (page 3 [0034]) and that these modulation schemes are applied to both the preamble and payload (auxiliary coding is transmitted using FSK, QAM, or BPSK, page4 [0043]). It should be noted that FSK is another modulation scheme known in the art.

Regarding claim 12 and 13, the combination of Haartsen, and Partyka, discloses all the limitations of claim 12 and 13. It should further be noted that it would have been obvious to have the source address comprise 5 or fewer symbols or the source address comprise 5 or fewer bits, as these are simple parameters of the system. The motivation to have fewer bits and symbols (5 or fewer) would be to efficiently use bandwidth of the channel and efficiently use the given bits in a source address field. One would use fewer bits in order to save resource and bandwidth.

Regarding claim 15, the combination of Haartsen, and Partyka, more specifically Haartsen discloses the flag indicates a modulation scheme applied to the segments in the data packet (auxiliary coding comprises coding information and data mode).

Regarding claims 16-19, 20, 21, 22-24, 25-28 and 30, the combination of Haartsen, and Partyka discloses all the limitations as discussed above. Haartsen discloses a

communication system comprising a transmitter (apparatus) and a receiver. It is noted that these claims are simply the apparatus performing the methods as discussed above.

4. Claims 14 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haartsen (US 2002/0131486), in view of Partyka (US 6925105), further in view of Chung et al. (US 6731618), hereinafter referred to as Haartsen, Partyka, and Chung.

Regarding claim 14, the combination of Haartsen, and Partyka, fails to disclose the specific limitation of having the auxiliary coding be provided in a signal independent from a signal including said data packet. It is however noted that sending auxiliary data over an independent signal separate from a data signal is a well-known technique known in the art that provides efficient transmissions and error corrections to the data, thus providing the motivation to do so.

Chung further discloses that a forward data preamble subchannel is used to transmit the MAC address and the auxiliary information (auxiliary coding is provided in a signal independent) and that the forward packet data is transmitted through the forward packet data traffic subchannel (signal including said data packet, col5 lines 1-9). It would have thus been obvious to incorporate the transmitting of auxiliary data and packet data through independent subchannels (signals) as disclosed by Chung into the method for training a radio receiver as disclosed by the combination of Haartsen, and Partyka, to efficiently transmit data from transmitter to receiver.

Regarding claims 29, the combination of Haartsen, Partyka and Chung discloses all the limitations as discussed above. Haartsen discloses a communication system comprising a transmitter (apparatus) and a receiver. It is noted that these claims are simply the apparatus performing the methods as discussed above.

5. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haartsen (US 2002/0131486), in view of Partyka (US 6925105), further in view of DeMartin et al. (US 6421527) hereinafter referred to as Haartsen, Partyka, and DeMartin.

Regarding claims 31, and 32, the combination of Haartsen and Partyka fails to specifically disclose having said training values be based on a moving average of past frames received from said transmitting device. Haartsen however discloses a system for training an equalizer in a radio receiver (page 1 [0001]) and that interference can be mitigated by using an equalizer (page 1 [0007]) and that radio receivers may use training sequences to adjust equalizer coefficients to compensate for fading (page 1[0009]). DeMartin further discloses of a system for dynamic adaptation of wireless communication between a mobile station and a base station (abstract) and further discloses that the receiver recognizes the header code and knows the codec mode to use for the frame and that the equalizer makes a decision as to whether a logic 1 or zero and passes the result to the channel decoder (col4 lines 30-41). DeMartin further discloses that a suitable moving average of the soft-values is a good estimator of the C/I ratio of the channel and that the absolute values of the soft bits for the current frame are

averaged together and the resulting value is then fed to a moving average filter and that the filter averages over 40 frames. The output of the filter, called average value, is then used to estimate the current C/I value and consequently the most suitable mode to be used (concept of having values (values to determine suitable mode) based on a moving average (average value) of past frames received from said transmitting device, col4 lines 49-col5 lines 11). It would have thus been obvious to a person skilled in the art to incorporate the concept of having values be based on a moving average of past frames received from said transmitting device as disclosed by DeMartin into the method of training a radio receiver as disclosed by Haartsen and Partyka in order to efficiently determine how to train a radio receiver.

Response to Arguments

1. Applicant's arguments with respect to claims 1-32 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
3. Daneshrad et al. (US 5930267), Frame Synchronization For Asynchronous Transmission
4. Haartsen (US 20020155850), Method Apparatus And System For Synchronization in Radio Communication Systems.

5. Kloos et al. (US 20030123400), Timing Recovery And Cross Talk Prevention In The Presence Of Co-Channel Interference.
6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NGUYEN NGO whose telephone number is (571)272-8398. The examiner can normally be reached on Monday-Friday 7am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on (571)272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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